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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Dae-wook Hong

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EXAMINER

TRINH, MICHAEL MANH

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/801,407	<b>Applicant(s)</b> HONG, DAE-WOOK	
	<b>Examiner</b> Michael Trinh	<b>Art Unit</b> 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 6-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/16/04</u> . | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

\*\*\* This office action is in response to Applicant's election filed on January 23, 2006. Claims 1-10 are pending. Claims 1-5 are elected.

### *Election/Restrictions*

1. Applicant's election with traverse of Group I, claims 1-5 in Paper date 1/23/2006 is acknowledged. The traversal is on the ground(s) that "...search and examination of the entire application could be made without serious burden...", "...different classifications...", etc.

First, the restriction in the last of office action mailed 12/20/2005 is corrected as follows:

Restriction to one of the following inventions is required under 35 U.S.C. § 121:

I. Claims 1-5, drawn to a first method of making a bipolar device, which method includes forming an Nbase and Pbase process and forming a logic N well and P well (Fig 6a).

II. Claims 6-10, drawn to a second method of making a bipolar device, which method includes forming a poly gate and sequentially forming an Nbase/Pbase (Fig 6b).

Currently, there is no generic claim. Group I invention to Group II invention are species and distinct, each from the other for the above reasons, in which forming a poly gate and sequentially forming an Nbase/Pbase are claimed in Group II.

Because these inventions are species and distinct for the reasons given above and have acquired a separate status as shown above, and as given in the above examples, the fields of search are not co-extensive and separate examination would be required, restriction for examination purposes as indicated is proper.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, even though this requirement is traversed. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

2. Second, Applicant's traversal is not found persuasive, because the application contains claims directed to a plurality of patentably distinct species, because reasons and given example(s) as of record and have acquired a separate status, in which the fields of search are not co-extensive and separate examination would be required for these species and distinct inventions, because Applicant did not even contravene the supposed errors of the given examples, and because Applicant did not distinctly and specifically point out the supposed errors of the given example in the restriction requirement. Examination, searching, and consideration all of species and distinct inventions clearly impose a very serious burden on the examiner and to the Office. Nowhere in the restriction requirement is stated that different classifications are a basis for making restriction requirement. The restriction is still proper as it is not required the examiner to examine, to search, and to consider all of groups of species and distinct inventions in

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the same single application merely because these groups and species can be classified in the same class (e.g. class 438). A very serious burden is thus on the examiner to search, examine, and consider all of these distinct inventions and species in a same single application.

Applicant further alleged about "...potential double patenting...". In response, first, no double patenting rejection have been made. Second, applicant's an apparent reason that the species are not patentably distinct due to potential double patenting. However, as already mentioned in the restriction requirement, should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention. However, in this instant case, no evidence or admission has been submitted by Applicant. Accordingly, searching, considering, and examining all of these inventions clearly impose a very serious burden on the previous examiner.

The requirement is still deemed proper and is therefore made FINAL.

3. Claims 6-10 are further withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

***Claim Rejections - 35 USC § 112***

4. Claims 2-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

\*\* Claim 2 is inconsistent with the specification and drawings (Figs), since, as at least shown in Figures 2, 6a, 6b, the "Option Process (PIP, HR-POLY, etc)" step is shown before the "Form POLY GATE" step. However, claim 2 inconsistently recites "performing a PIP process after the step of forming the poly gate".

\*\* Claim 3 is inconsistent with the specification and drawings, since, as at least shown in Figures 2, 6a, 6b, the "Option Process (PIP, HR-POLY; etc)" step is shown before the "Form

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POLY GATE” step. However, claim 3 inconsistently recites “performing a HR-poly process after the step of forming the poly gate”.

### ***Claim Objections***

5. Claims 4-5 are objected as being duplicated and being of improper dependent form for failing to further limit the subject matter of a previous base claim, since the limitations of “sequentially forming NMOS/PMOS LDD source/drain” are already recited in base claim 1.

Accordingly, claims 4-5 should be canceled or amended.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant’s admitted prior art (Present specification page 1, line 11 through page 2; and Prior Art Fig 2) taken with Ratnakumar (5,011,784).

Applicant’s admitted prior art teaches a method for manufacturing a bipolar transistor by using a CMOS process, comprising: performing a high voltage deep well and drive-in process on a semiconductor substrate (Fig 2, step S12); performing a local oxidation of silicon (LOCOS) process (Fig 2, step S14); performing an Nbase and Pbase process; forming logic N well and P well and annealing the logic wells (Fig 2, step S18, and present specification page 1, line 11 through page 2); forming a poly gate and sequentially forming NMOS/PMOS LDD source/drain (Fig 2, steps S22 and S24); and forming N+/P+ source/drain, annealing the source/drain and sequentially performing a CONT-PAD process (Fig 2, steps S26,S28,S30). Re claims 2-3, due to inconsistency of claims 2-3 in the 112 rejection above, and since an “Option Process (PIP, HR-POLY, etc)” step as shown in the Prior Art Figure 2 is similarly shown in

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Figures 6a and 6b, it is interpreted the same that a PIP process (claim 2) or a HR-poly (claim 3) is performed after the step of forming the poly gate. Re claims 4-5, sequentially forming NMOS/PMOS LDD source/drain is shown in Figure 2, steps S22 and S24.

Applicant's admitted prior art lacks performing an Nbase and Pbase process.

However, Ratnakumar teaches (at Figures 1, 2A,3B; col 3, lines 45-68; col 10, line 60 through col 11; cols 4-10) performing a process to form an N-base 28 and an P-base 30 in a deep well 24/26.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the bipolar transistor by using a CMOS process of Applicant's admitted prior art by performing a process to form an N-base and an P-base, as taught by Ratnakumar. This is because of the desirability to form isolated the bipolar transistors with better performance characteristics by using a CMOS process, in which current gain can be easily adjusted by optimizing dose of the N-base and P-base.

8. Claims 4-5 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (Present specification page 1, line 11 through page 2; and Prior Art Fig 2) taken with Ratnakumar (5,011,784), as applied to claims 1-3, and further of Yang et al (5,438,009).

Applicant's admitted prior art and Ratnakumar teach a method for manufacturing a bipolar transistor by using a CMOS process, as applied above to claims 2-3.

Applicant's admitted prior art already teaching performing an PIP process and an HR-POLY (Fig 2), but it is shown above the step of forming the poly gate.

However, Yang teaches (at Figures 5,4; col 6) performing a PIP process to form poly-interpolyoxide-poly (54,57,59; col 6, lines 9-12, lines 30-62) after the step of forming the poly gate 21 (re claim 2), and performing an HR-poly process (hydrogen reduction polysilicon) to form a high doped polysilicon 54 (col 6, lines 31-56) after the step of forming the poly gate 21 (Figs 2,4; col 5, lines 17-24).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the semiconductor device of Applicant's admitted prior art by performing an PIP process after forming the poly gate (claim 2), and performing an HR- poly

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after forming the poly gate (claim 3), as taught by Yang. This is because of the desirability to form a semiconductor device comprising a high quality PIP capacitor structure having a high doped polysilicon, interpolyoxide, and a high doped polysilicon, and because of the desirability to electrically connect the PIP capacitor to the underlying transistor.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael M. Trinh whose telephone number is (571) 272-1847. The examiner can normally be reached on M-F: 9:00 Am to 5:30 Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The central fax phone number is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Michael Trinh  
Primary Examiner